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EXAMINER

GEYER, SCOTT B

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 07/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,875

Applicant(s)

CAO, DENSEN

Examiner

Scott B. Geyer

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21,23,24,26,27 and 30-36 is/are rejected.
- 7) ☒ Claim(s) 26,29,31 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 21-36 (and cancellation of claims 1-20) in Paper No. 9 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 21-36 are treated on their merits below.

Information Disclosure Statement

2. The references cited within the IDS paper nos. 2 and 7, received on August 24, 2001 and February 24, 2003 respectively, have been considered.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Figure 1: numeral **108b**;

Figure 3e: numeral **220**;

Figure 4c: numerals **334**, **340** and **337**;

Figure 11: numeral **701**.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Figure 1: numerals **108, 120, 121**;

Figure 3b: numeral **1209**;

Figure 3e: numeral **201**;

Figure 4c: numeral **330, 331, 334b, 394**;

Figure 6: numeral **403a**.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The abstract of the disclosure is objected to because of minor informalities as follows:

Paragraph [0074], line 3: change "such as and LED" to - - such as a LED - -.

Correction is required. See MPEP § 608.01(b).

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6. The disclosure is objected to because of the following informalities:

Paragraph [0002], line 1: change "LED"s" to - - LEDs - -;

(There are multiple occurrences of this error throughout the specification)

Paragraph [0007], line 2: change "Thes" to - - These - -;

Paragraph [0010], line 1: change "an LED" to - - a LED - -;

(There are multiple occurrences of this error throughout the specification)

Paragraph [0038], line 5: change "VCSEL"s" to - - VCSELS - -;

Paragraph [0047], line 4: change "chip"s" to - - chip's - -;

Paragraph [0051], line 13: change "p AlGaN" to - - p-AlGaN - - (insert hyphen);

(There are multiple occurrences of this error throughout the specification)

Paragraph [0062], line 7: delete space between "8" and "b".

Appropriate correction is required.

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware of in the specification.

Claim Objections

7. Claims 26, 29, 31 and 34 objected to because of the following informalities:

Claim 26: claim 26 currently claims dependence to claim 2. As claim 2 has been cancelled, the examiner assumes this to be a typographical error, and the claim limitation of claim 29 refers to "said air chamber", the examiner assumes this to be a should be dependent upon claim 21.

Claim 29: claim 29 currently claims dependence to itself (claim 29). Since the typographical error, and the claim should be dependent upon claim 28.

Claim 31: on line 2, change "chips capable" to - - chips is capable - -.

Claim 34: on line 2, change "an LED" to - - a LED - -.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 21 recites "selecting a plurality of semiconductor devices"... "being selected from the group consisting of". This claim language does not lend itself to a determination of how many devices are to be selected and which ones (plural) of the group alone or in combination, are to be chosen. Therefore, for purposes of examination, the examiner will interpret this limitation to mean 'a semiconductor device chosen from the group consisting of...' In other words, only one device will be referenced for the listed group.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. Claims 30, 31, 32 and 34 are rejected under 35 U.S.C. 102(a) as being anticipated by Begemann (6,220,722 B1).

12. As to **claim 30**, Begemann teaches a method of making a semiconductor light source, shown by figures 1 and 2. Specifically, Begemann teaches an enclosure 5, fabricated of glass or plastic and transparent to light (column 2, lines 13 et seq.) and a

base 2 to which the enclosure is attached. Primary heat sinks 12 are attached to the LEDs and are located within the enclosure 5. Secondary heat sinks 3 are also located within the enclosure 5 and are attached to the primary heat sinks 12.

13. As to **claim 31**, Begemann teaches LEDs capable of emitting light, such as red, green or blue (column 2, lines 40 et seq.).

14. As to **claim 32**, Begemann teaches LEDs capable of emitting monochromatic light, such as red, green or blue (column 2, lines 40 et seq.).

15. As to **claim 34**, Begemann teaches LEDs (column 2, lines 40 et seq.).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) in view of Schweber ("LEDs move from indication to illumination", EDN magazine, August 2, 2001, page 78).

18. As to **claim 21**, Begemann teaches a method of making a semiconductor light source, shown by figures 1 and 2. Specifically, Begemann teaches an enclosure 5, fabricated of glass or plastic and transparent to light (column 2, lines 13 et seq.) and the enclosure 5 has an interior volume. Within the enclosure is fabricated a heat sink structure 3, which has a plurality of panels (i.e., faces). Semiconductor devices 4, such as light emitting diodes (LEDs), are mounted to the faces of the heat sink structure 3.

Begemann does not specifically teach a conversion coating for converting monochromatic light to white light. However, Schweber teaches production of white light from a monochromatic light LED by using a phosphorous filter in the lens of the LED (see page 78). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the invention of Begemann with a white light conversion coating as taught by Schweber so as to provide a method of making a white light producing device irrespective of which color LED is used. In other words, any color LED device could be used and replaced without comprising the color of light produced by the device.

19. As to **claim 27**, Begemann teaches a fan located within the light source (column 4, lines 7 et seq.)

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20. Claims 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) and Schweber ("LEDs move from indication to illumination", EDN magazine, August 2, 2001, page 78) as applied to claim 21 above, and further in official notice.

21. As to **claim 24**, heat conductive adhesives are notoriously well known in the semiconductor art and it would have been obvious to a person of ordinary skill in the art to use a heat conductive adhesive to assist in heat transfer from the device to the heat dissipating substrate to which the heat-generating-device is attached.

22. As to **claim 26**, semiconductor devices consisting of a substrate, a buffer layer, a first cladding layer, an active layer and a second cladding layer are notoriously

well known in the art of semiconductor manufacturing and it would have been obvious to a person of ordinary skill in the art of light emitting diode semiconductor manufacturing to make this layered structure so as to provide a semiconducting structure which produces light as a result of an applied voltage.

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23. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1), Schweber ("LEDs move from indication to illumination", EDN magazine, August 2, 2001, page 78) as applied to claim 21 above, and further in view of Chen et al. (6,580,228 B1).

24. As to **claim 23**, all of the limitations are met by Begemann and Schweber as stated above except for a power module for powering the light source which includes a fitting for installation in a traditional light bulb socket and an AC/DC converter. Although the structure shown in figure 1 and 2 of Begemann appears to be a fitting for a traditional (i.e. conventional) lamp socket fitting, this is not specifically stated by Begemann). However, Chen et al. teach a similar LED light source in figure 1 wherein the structure has a fitting adapted to electrically and mechanically engage a conventional lamp socket (column 2, lines 35 et seq.). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the manufacture of an LED light as taught by Begemann and Schweber with a traditional light socket fixture capable of changing current as taught by Chen et al. so as to provide for the manufacture of a structure capable of being readily used in homes wired for

traditional incandescent lights, and avoid the need for the intended operators (humans) of such devices to re-wire their homes and obtain new light sockets.

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25. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) as applied to claim 30 above, and further in view of Schweber ("LEDs move from indication to illumination", EDN magazine, August 2, 2001, page 78).

26. As to **claim 33**, Begemann teaches all of the claimed limitations as detailed above except for application of a light conversion coating to the enclosure. However, Schweber teaches production of white light from a monochromatic light LED by using a phosphorous filter in the lens of the LED (see page 78). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the invention of Begemann with a white light conversion coating as taught by Schweber so as to provide a method of making a white light producing device irrespective of which color LED is used. In other words, any color LED device could be used and replaced without comprising the color of light produced by the device.

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27. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann (6,220,722 B1) as applied to claim 30 above, and further in view of official notice.

28. As to **claim 35**, it is notoriously well known in the art of semiconductor manufacturing to use aluminum as a heat sink material and one of ordinary skill in the

art would have been motivated to use aluminum as a heat sink material as it is readily available, inexpensive, easy to work with and is a good conductor of heat.

29. As to **claim 36**, semiconductor devices consisting of a substrate, a buffer layer, a first cladding layer, an active layer and a second cladding layer are notoriously well known in the art of semiconductor manufacturing and it would have been obvious to a person of ordinary skill in the art of light emitting diode semiconductor manufacturing to make this layered structure so as to provide a semiconducting structure which produces light as a result of an applied voltage.

Allowable Subject Matter

30. Claims 22, 25 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record and to the examiner's knowledge does not teach or render obvious, at least to the skilled artisan, the instant invention, regarding:

application of a conversion coating to the interior of the enclosure for a semiconductor light source, as recited in claim 22; or

application of a light reflective adhesive between a chip and a heat sink within a semiconductor light source, as recited in claim 25; or

an air chamber within a heat sink, wherein the heat sink is within a semiconductor light source, as recited in claim 28. (Claim 29 is dependent upon claim 28 - -see paragraph 7 above).

31. The following references are cited as being relevant/related to applicant's invention: Chen et al. (6,580,228 B1), Shimizu et al. (6,577,073 B2), Shih (6,561,680 B1), Hartley (6,502,952 B1), Begemann (6,499,860 B2), Conway et al. (6,149,283), Hochstein (6,045,240), Singer et al. (5,813,752), Levy et al. (5,765,940).

Conclusion

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott B. Geyer whose telephone number is (703) 306-5866. The examiner can normally be reached on weekdays, between 10:00am - 6:30pm. E-mail: scott.geyer@uspto.gov

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SB Geyer

SBG
July 14, 2003


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